



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/643,191

08/18/2003

Martha Gardner

134734

3700

6147

7590

08/18/2006

GENERAL ELECTRIC COMPANY  
GLOBAL RESEARCH  
PATENT DOCKET RM. BLDG. K1-4A59  
NISKAYUNA, NY 12309

EXAMINER

AHLUWALIA, NAVNEET K

ART UNIT

PAPER NUMBER

2166

DATE MAILED: 08/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/643,191	<b>Applicant(s)</b> GARDNER ET AL.	
	<b>Examiner</b> Navneet K. Ahluwalia	<b>Art Unit</b> 2166	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 June 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 and 6-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This communication is in response to the Amendment filed June 7, 2006.

#### ***Response to Arguments***

2. Applicant's arguments filed June 7, 2006 have been fully considered but they are not persuasive. Claims 1 – 4 and 6 – 22 are pending and remain rejected in this Office Action. The new oath has been accepted, due to the cancellation of claim 5 rejection under 35 USC 112 and 35 USC 101 are withdrawn.

3. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Henly's prediction of properties of and optimization of plant's output of products in combination with the prediction models and risk analyzer of Philips would result in accurate prediction of the crude oil blend to be used (paragraph 0004 and 0012, Henly). Also using the models of Philips would be vital to the refiner to have an accurate prediction of the properties and values of the resulting product (paragraphs 0061 – 0065, Henly).

*Applicant argues that there is no teaching in Philips and Henly of "database... related to ...crude or crude blend" and "at least one predictive performance and/or risk assessment model designed to optimize or improve a refining process".*

*In response to Applicant's argument, the Examiner submits that the previous office action clearly stated that does not disclose the crude selection and blend. It was also stated that Henly teaches the crude selection and blend relating to accurate prediction of properties and blended fuel optimization (page 2 paragraph 0004, Henly).*

*Henly also teaches the use of regressive analysis of data related to the measured properties of material, the process and the characteristics of the product and the predictive equation for calculating a predicted value of the characteristics and utilization (page 2, paragraph 0012, Henly). Philips and Henly in combination teach the claimed invention.*

*Claims 11 and 17 recite the same subject matter and for the same reasons as cited above the rejection is maintained. Hence, Applicant's arguments do not distinguish the claimed invention over the prior art of record. In light of the foregoing arguments, the 102 rejections are sustained*

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1 – 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Philips et al. ('Philips' herein after) (US 6,792,399 B1) further in view of Henly et al. ('Henly' herein after) (EP 1102187 A2).

With respect to claim 1,

Philips discloses a system for assessing and optimizing crude selection comprising:

- a database storing data related to at least one crude or crude blend (column 8 lines 12 – 21 and 31 – 41, Philips); and
- a predictive engine having programmable instructions configured for execution by at least one processor for accessing the database to obtain data and for executing at least one predictive performance and/or risk assessment

model designed to optimize or improve a refining process (column 9 lines 34 – 44 and column 56 lines 47 – 56, Philips).

Philips however does not disclose the crude selection and blend.

Henly teaches the crude selection and blend (page 2 paragraph 0004 and 0012, Henly).

It would have been obvious to one of ordinary skill in the art of data processing at the time of the present invention to combine the teachings of cited references because Henly's prediction of properties of and optimization of plant's output of products in combination with the prediction models and risk analyzer of Philips would result in accurate prediction of the crude oil blend to be used (paragraph 0004 and 0012, Henly).

7. Claims 2 – 4, 6 – 10 are rejected under the same rationale given for claim 1. The citations of the elements claimed and taught are listed below.

With respect to claim 2,

Philips discloses the system in accordance with claim 1, wherein the predictive engine takes as input crude information corresponding to at least one crude slate and at least one refinery operating parameter and/or condition (column 11 lines 40 – 54, Philips) and uses desirability metrics to assess similarity of the input to data in the database (column 10 lines 59 – 67, Philips).

With respect to claim 3,

Philips discloses the system in accordance with claim 2, wherein the at least one refinery operating parameter and/or condition corresponds to a specific refinery (paragraph 0065, Henly), and wherein the at least one predictive performance or risk assessment model executed by the predictive engine predicts performance or risk measures of refining the at least one crude slate using the specific refinery for running the refining process (paragraphs 0039 and 0043, Henly), probability of problems occurring during the refining process, and distribution of the problems throughout the refining process (column 10 lines 59 – 67, Philips).

With respect to claim 4,

Philips discloses the system in accordance with claim 1, wherein the predictive engine accesses treatment options stored within the database suitable for optimizing performance of the refining process (column 44 lines 30 – 51, Philips).

With respect to claim 6,

Philips discloses the system in accordance with claim 1, wherein the predictive engine comprises:

- a crude search module which takes as input at least one crude name and/or at least one chemical or other characteristic of the at least one crude identifiable by the at least one crude name and outputs information with respect to at least one crude stored in the database, wherein the at least one crude output by the crude search module corresponds to at least one crude

- identifiable by the at least one crude name, or corresponds to at least one crude having at least one chemical or other property similar to at least one chemical or other property of the at least one crude identifiable by the at least one crude name (column 9 lines 34 – 44 and column 56 lines 47 – 56, Philips);
- an operating parameters/conditions search module which takes as input at least one refinery operating parameter and/or condition and outputs information stored in the database indicating at least one refinery having at least one identical or similar operating parameter and/or condition compared to the at least one refinery operating parameter and/or condition input (column 11 lines 40 – 54, Philips); and
  - a crude slate and chemicals selection module which takes as input the information output by the crude search module and the information output by the operating parameters/conditions search module, and outputs at least one proposed crude slate, chemical treatment and/or performance or risk parameter (column 44 lines 30 – 51, Philips).

With respect to claim 7,

Henly teaches wherein the crude slate and chemicals selection module includes a first tier, wherein the first tier identifies at least one crude slate stored in the database which is similar to at least one user-desired crude slate by scoring each crude slate component of the at least one user-desired crude slate based on how well the crude



slate component satisfies user criteria, and combines all individual scores of the at least one user-desired crude slate to provide a composite crude slate score; wherein the first tier further scores each individual operating parameter and/or condition based on how well the individual operating parameter and/or condition satisfies the user criteria for that operating parameter and/or condition and outputs an operational score, and then combines all individual operational scores to provide a composite operational score; and wherein the first tier further determines a highest total overall score by combining the composite crude slate and composite operational scores (paragraphs 0060 and 0062, Henly).

With respect to claim 8,

Henly teaches wherein the crude slate and chemicals selection module further includes a second tier, wherein the second tier includes as an input at least information derived by the first tier and obtains predicted response parameters of interest for selected crude slates, operational parameters and/or conditions, and/or chemical treatments using the at least one predictive performance model (page 1 section 57, Henly).

With respect to claim 9,

Philips discloses the system in accordance with claim 1, wherein the predictive engine executes at least one optimization algorithm for the refining process (column 45 lines 16 – 25 and column 54 lines 61 – 67, Philips).

With respect to claim 10,

Philips discloses the system in accordance with claim 9, wherein the at least one predictive performance model and/or the at least one risk assessment model is a type of model selected from the group consisting of linear regression models; logistic regression models; non-linear regression models; classification and regression trees and extensions thereof; multiple additive regression splines and extensions thereof; partial least squares regression models (column 12 lines 54 – 62, Philips); generalized additive models; neural networks and extensions thereof, such as projection pursuit regression (column 4 lines 33 – 40 and column 44 lines 26 – 31, Philips); simulation models (column 3 lines 58 – 62, Philips); expert system-based models, such as Bayesian Belief Networks; theoretical calculation models; engineering economic models; financial risk models; decision analytic models; and engineering process models based on chemistry, physics and engineering principles, such as reaction kinetics and thermodynamics, mass transfer, energy transfer, separation processes, and fluid dynamics (column 55 lines 13 – 33, Philips).

With respect to claim 11,

Philips discloses a method for assessing and optimizing crude selection comprising the steps of:

- accessing a database for obtaining data related to at least one stored crude or crude blend (column 8 lines 12 – 21 and 31 – 41, Philips); and

- executing at least one predictive performance and/or risk assessment model designed to optimize or improve a refining process for at least one crude or crude blend (column 9 lines 34 – 44 and column 56 lines 47 – 56, Philips).

Philips however does not disclose the crude selection and blend.

Henly teaches the crude selection and blend (page 2 paragraph 0004 and 0012, Henly).

It would have been obvious to one of ordinary skill in the art of data processing at the time of the present invention to combine the teachings of cited references because Henly's prediction of properties of and optimization of plant's output of products in combination with the prediction models and risk analyzer of Philips would result in accurate prediction of the crude oil blend to be used (paragraph 0004 and 0012, Henly).

8. Claims 12 - 16 are rejected under the same rationale given for claim 11. The citations of the elements claimed and taught are listed below.

With respect to claim 12,

Philips discloses the method in accordance with claim 11, further comprising the steps of:

- taking as input crude information corresponding to the at least one crude or crude blend and at least one refinery operating parameter and/or condition (column 11 lines 40 – 54, Philips); and

- using desirability metrics to assess similarity of the input to data in the database, including the at least one stored crude or crude blend (column 10 lines 59 – 67, Philips).

With respect to claim 13,

Philips discloses the method in accordance with claim 12, wherein the at least one refinery operating parameter and/or condition corresponds to a specific refinery (paragraph 0065, Henly), and wherein the at least one predictive performance or risk assessment model predicts performance or risk measures of refining the at least one crude or crude blend using the specific refinery for running the refining process (paragraphs 0039 and 0043, Henly), probability of problems occurring during the refining process, and distribution of the problems throughout the refining process (column 10 lines 59 – 67, Philips).

With respect to claim 14,

Philips discloses the method in accordance with claim 11, further comprising the step of accessing treatment options stored within the database suitable for improving or optimizing performance of the refining process (column 44 lines 30 – 51, Philips).

With respect to claim 15,

Philips discloses the method in accordance with claim 11, further comprising the step of executing at least one optimization algorithm for the refining process (column 45

lines 16 – 25 and column 54 lines 61 – 67, Philips).

With respect to claim 16,

Philips discloses the method in accordance with claim 15, wherein the at least one predictive performance model and/or the at least one risk assessment model is a type of model selected from the group consisting of linear regression models; logistic regression models; non-linear regression models; classification and regression trees and extensions thereof; multiple additive regression splines and extensions thereof; partial least squares regression models (column 12 lines 54 – 62, Philips); generalized additive models; neural networks and extensions thereof, such as projection pursuit regression; simulation models (column 3 lines 58 – 62, Philips); expert system-based models, such as Bayesian Belief Networks; theoretical calculation models; engineering economic models; financial risk models; decision analytic models; and engineering process models based on chemistry, physics and engineering principles, such as reaction kinetics and thermodynamics, mass transfer, energy transfer, separation processes, and fluid dynamics (column 55 lines 13 – 33, Philips).

With respect to claim 17,

Philips discloses a computer readable medium storing a set of instructions configured for execution by at least one processor for performing the steps of:

- accessing a database for obtaining data related to at least one stored crude or crude blend (column 8 lines 12 – 21 and 31 – 41, Philips); and

Art Unit: 2166

- executing at least one predictive performance or risk assessment model designed to optimize or improve a refining process for at least one crude or crude blend (column 9 lines 34 – 44 and column 56 lines 47 – 56, Philips).

Philips however does not disclose the crude selection and blend.

Henly teaches the crude selection and blend (page 2 paragraph 0004 and 0012, Henly).

It would have been obvious to one of ordinary skill in the art of data processing at the time of the present invention to combine the teachings of cited references because Henly's prediction of properties of and optimization of plant's output of products in combination with the prediction models and risk analyzer of Philips would result in accurate prediction of the crude oil blend to be used (paragraph 0004 and 0012, Henly).

9. Claims 18 - 22 are rejected under the same rationale given for claim 17. The citations of the elements claimed and taught are listed below.

With respect to claim 18,

Philips discloses the computer readable medium in accordance with claim 17, further performing the steps of:

- taking as input crude information corresponding to the at least one crude or crude blend and at least one refinery operating parameter and/or condition (column 11 lines 40 – 54, Philips); and

- using desirability metrics to assess similarity of the input to data in the database, including the at least one stored crude or crude blend (column 10 lines 59 – 67, Philips).

With respect to claim 19,

Philips discloses the computer readable medium in accordance with claim 18, wherein the at least one refinery operating parameter and/or condition corresponds to a specific refinery (paragraph 0065, Henly), and wherein the at least one predictive performance and/or risk assessment model predicts performance or risk measures of refining the at least one crude or crude blend using the specific refinery for running the refining process (paragraphs 0039 and 0043, Henly), probability of problems occurring during the refining process, and distribution of the problems throughout the refining process (column 10 lines 59 – 67, Philips).

With respect to claim 20,

Philips discloses the computer readable medium in accordance with claim 17, further performing the step of accessing treatment options stored within the database suitable for optimizing performance of the refining process (column 44 lines 30 – 51, Philips).

With respect to claim 21,

Philips discloses the computer readable medium in accordance with claim 17, further performing the step of executing at least one optimization algorithm for the refining process (column 45 lines 16 – 25 and column 54 lines 61 – 67, Philips).

With respect to claim 22,

Philips discloses the computer readable medium in accordance with claim 21, wherein the at least one predictive performance model and/or the at least one risk assessment model is a type of model selected from the group consisting of linear regression models; logistic regression models; non-linear regression models; classification and regression trees and extensions thereof; multiple additive regression splines and extensions thereof; partial least squares regression models (column 12 lines 54 – 62, Philips); generalized additive models; neural networks and extensions thereof, such as projection pursuit regression (column 4 lines 33 – 40 and column 44 lines 26 – 31, Philips); simulation models (column 3 lines 58 – 62, Philips); expert system-based models, such as Bayesian Belief Networks; theoretical calculation models; engineering economic models; financial risk models; decision analytic models; and engineering process models based on chemistry, physics and engineering principles, such as reaction kinetics and thermodynamics, mass transfer, energy transfer, separation processes, and fluid dynamics (column 55 lines 13 – 33, Philips).



***Conclusion***

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

**Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Navneet K. Ahluwalia whose telephone number is 571-272-5636. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alam T. Hosain can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Navneet K. Ahluwalia  
Examiner  
Art Unit 2166



MOHAMMAD ALI  
PRIMARY EXAMINER

Dated: 08/14/2006